

EDG 100 Spring 2000
 Design Project 2 – Cost estimating guide

Following is the typical cost structure of manufactured products

Direct Cost				Indirect Cost			
Material	Purchased Parts	Labor	Tooling	Overhead	Selling Expenses	Profit	Discount
VARIABLE COSTS			FIXED COSTS				
MANUFACTURING COSTS							
TOTAL COST							
SELLING PRICE = 3*manufacturing cost = 9*material cost							
LIST PRICE (Total Cost to Customers)							

The above table groups costs into two basic categories: Direct and Indirect. You will focus on the Direct Costs as shown by the shading in the table. Material, Parts and Labor can vary according to quantity, whereas tooling (and equipment) are one-time charges and are fixed. In the cases where tooling and equipment are needed, the cost is spread over the quantity of parts or years of service. The Total Cost reflects all costs including Overhead expenses (see note below on its applicability). The selling price and list price reflect the market demand and desired profit.

In the Alcatel Project processing equipment may be modified or redesigned. This will be a piece of Tooling Equipment with its own Material, Purchased Parts, Labor and Overhead (expenses incurring during operation) costs. In general

Material and Parts prices can be found in a variety of sources.

To find American manufacturers of almost anything check the Thomas Register at <http://www.thomasregister.com/>

To buy typical industrially used items check McMaster Carr at <http://www.mcmaster.com/>

Labor costs could be estimated on basis of at least \$30/hour rate.

Reasonable estimates of the time needed for fabricating parts, assembling and optimizing the new equipment can be obtained from the **Learning Factory** on Penn State campus.

Overhead expenses include the cost of all supporting infrastructure, such as lighting, janitorial support, clerical support, that is related to the operation of the facility. It is usually set for a given period of time (for example a year). Your design will not affect overhead costs.